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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/052,003 | 01/16/2002 | Sooyoul Hong | 155634-0130 | 9134 |
| 1622 | 7590 | 09/19/2006 | EXAMINER | |
| IRELL & MANELLA LLP 840 NEWPORT CENTER DRIVE SUITE 400 NEWPORT BEACH, CA 92660 | | | | RICKMAN, HOLLY C |
| | | ART UNIT | | PAPER NUMBER |
| | | 1773 | | |

DATE MAILED: 09/19/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | |
|------------------------------|----------------------------------|-------------------------|
| Office Action Summary | Application No. | Applicant(s) |
| | 10/052,003 | HONG ET AL. |
| | Examiner Holly Rickman | Art Unit 1773 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 05 July 2006.

2a) This action is FINAL. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-4 and 6-9 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) Claim(s) _____ is/are allowed.

6) Claim(s) 1-4,6-9 is/are rejected.

7) Claim(s) _____ is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some * c) None of:

1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

| | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ . |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ . | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| | 6) <input type="checkbox"/> Other: _____ . |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Do et al. (US 6372330) in view of Takahashi (US 6124020).

Do et al. disclose a magnetic recording medium having a non-magnetic substrate, an underlayer, a first magnetic layer, a Ru layer, a second magnetic layer, a spacer layer 36' thereon (see col. 8, lines 18-46 and Fig. 6). Additional antiferromagnetically coupled magnetic layers are deposited thereon and an overcoat is deposited on top of these layers (see Fig. 6). The reference teaches that the spacer layer 36' can be formed from the same material used for the non-magnetic spacer layers (i.e., Ru layers) such as Ru, Cr, Rh, Ir, and Cu (col. 3, lines 57-66). An example using a Cr layer is given (col. 8, lines 28-36). It would have been obvious to one of ordinary skill in the art at the time of invention to choose Cr from the group of spacer layer (36') materials disclosed by Do et al. in view of the functional equivalence of the materials.

The limitation "a layer of chromium located adjacent to said top magnetic layer, a portion of said chromium being located between said grains of said top magnetic layer" has been interpreted to mean that there is a layer of chromium on either side of (but not necessarily in

direct contact with) the top magnetic layer and the top magnetic layer contains Cr between the magnetic grains therein.

Do et al. teach the use of granular ferromagnetic layers formed from CoPtCrB alloys. The reference does not specifically disclose that the granular ferromagnetic layers contain Cr at the grain boundaries. However, it is the examiner's contention that this is an inherent feature of a "granular" CoPtCrB alloy. In any case, it would have been obvious to one of ordinary skill in the art at the time of invention to add Cr to the grain boundaries in the magnetic layers taught by Do et al.

Takahashi teaches a magnetic recording medium having a granular magnetic recording layer formed from a CoCr based alloy wherein Cr is present at the grain boundary regions in order to reduce medium noise and increase recording density (see col. 2, lines 25-43). The examiner maintains that Takahashi establishes that it is known in the art that a "granular" CoCr-based magnetic film contains Cr at the grain boundaries.

In the event that Applicant disputes this fact, it is also noted that the reference clearly establishes a motivation to add Cr to the grain boundaries of a CoCr-based granular magnetic layer. Thus, it would have been obvious to one of ordinary skill in the art at the time of invention to add Cr to the grain boundaries of Takahashi in order to reduce medium noise and increase recording density as taught by Takahashi.

3. Claims 6-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Do et al. (US 6372330) in view of Takahashi (US 6124020) and further in view of Bian et al. (US 6572989).

Do et al. in view of Takahashi teach all of the limitations of the claims as detailed above, except for the specific elements of the magnetic recording apparatus for use with the disclosed recording medium.

Bian et al. teaches a conventional disk drive structure which includes a recording medium, a plurality of actuator arms, a spindle and spindle motor, magnetic head, and a voice control motor (col. 5, lines 24-62).

It would have been obvious to one of ordinary skill in the art at the time of invention to use a conventional recording head assembly such as the one taught by Bian et al. in combination with the recording medium taught by Do et al. in order to form a functional disk drive.

Response to Arguments

4. Applicant's arguments filed 7/5/06 have been fully considered but they are not persuasive.

Applicant argues that Do fails to disclose or suggest a layer consisting of Ru that is separate from the Ru layer. The examiner maintains that Do suggests the use of a Ru layer and a Cr layer as claimed for the reasons detailed above in paragraph no 2. The examiner acknowledges that Do does not disclose a specific embodiment having a Ru layer as claimed in combination with a Cr layer as claimed. However, the examiner contends that given the disclosure of a Ru coupling layer (no. 46 in Fig 6) and a spacer layer (no. 36' in Fig 6) which may be selected from a group of several elements which includes Cr, it would have been obvious to one of ordinary skill in the art to choose Cr from the group of disclosed elements for the spacer layer.

Applicant further argues that Do does not suggest that a portion of the chromium layer is located between the grains of the top magnetic layer as required by the limitation of claim 1 “a portion of chromium from said chromium layer being located between said grains of said top magnetic layer.” This limitation has an implied method step. That is, the limitation requires the presence of Cr between the grains of the top magnetic layer and indicated that the Cr comes from “said chromium layer.” However, this is a process limitation in an article claim and does not distinguish over the prior art in the absence of evidence that the introduction of Cr into the top magnetic layer via the Cr layer results in a materially different product.

The examiner maintains that this limitation is met because the “top magnetic layer” taught by Do is disclosed to be a granular film of sputter deposited CoPtCrB alloy (see col. 2, lines 56-58). One of ordinary skill in the art would understand this disclosure to mean that the magnetic grains are segregated by the presence of non-magnetic elements. Thus, the examiner maintains that the granular CoPtCrB alloy taught by Do would necessarily contain grain boundaries having some amount of Cr therein.

The examiner maintains that a *prima facie* case of obviousness has been set forth.

Conclusion

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

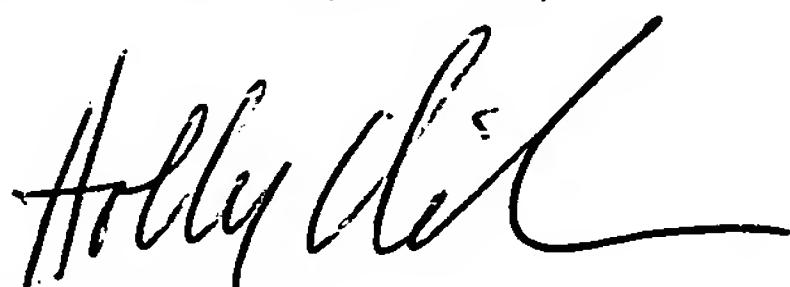
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Holly Rickman whose telephone number is (571) 272-1514. The examiner can normally be reached on Monday-Friday 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carol Chaney can be reached on (571) 272-1284. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Holly Rickman
Primary Examiner
Art Unit 1773